

WHAT IS CLAIMED IS:

1. A method for transmitting information to a client over a communications network, comprising the steps of:

5 registering the client with an agent at a multicast-enabled computer; receiving, by the multicast-enabled computer, a multicast data item; generating a unicast data item as a function of the received multicast data item; and transmitting, by the agent, the unicast data item to the registered client.

10 2. The method according to claim 1, wherein the communications network is the Internet.

15 3. The method according to claim 1, the registering step further comprising the steps of:

generating, by the client, a request to join a multicast group; transmitting the generated request to a source server; maintaining, by the source server, a list of available agents; designating, by the source server, an agent to provide service to the client; and assigning, by the source server, the client to the designated agent.

20 4. The method according to claim 3, wherein the source server is distributed over a plurality of computer systems.

25 5. The method according to claim 1, the registering step further comprising the steps of:

generating, by the client, a request to join a multicast group; transmitting the generated request to a source server; maintaining, by the source server, a list of available agents; determining a composite distance metric for a client/agent pair; designating, by the source server, an agent to provide service to the client as a function of the composite distance metric for the client/agent pair; and assigning, by the source server, the client to the designated agent.

30 6. The method according to claim 5, wherein the source server is distributed over a plurality of computer systems.

7. The method according to claim 1, further comprising:
determining a composite distance metric for a client/agent pair.

8. The method according to claim 7, the registering step further comprising:
5 registering the client with an agent at a multicast-enabled computer as a function of
the composite distance metric.

9. The method according to claim 1, the registering step further comprising the steps of:
10 generating, by the client, a request to join a multicast group;
transmitting the generated request to the agent at a multicast-enabled computer; and
adding, by the agent, the client to a list of unicast recipients serviced by the agent.

10. The method according to claim 1, the registering step further comprising the steps of:
generating, by the client, a request to join a multicast group;
transmitting the generated request to a primary agent at a multicast-enabled computer;
maintaining, by the primary agent, a list of available agents;
designating, by the primary agent, a service provider agent to provide service to the
client; and
assigning, by the primary agent, the client to the designated service provider agent.

11. The method according to claim 1, the registering step further comprising the steps of:
generating, by the client, a request to join a multicast group;
transmitting the generated request to a primary agent at a multicast-enabled computer;
maintaining, by the primary agent, a list of available agents;
25 determining a composite distance metric for a client/agent pair;
designating, by the primary agent, a service provider agent to provide service to the
client as a function of the composite distance metric for the client/agent pair; and
assigning, by the primary agent, the client to the designated service provider agent.

30 12. The method according to claim 1, further comprising the step of:
storing client information with the agent as a function of the registering step.

13. The method according to claim 12, the generating step further comprising the steps of:

retrieving a destination address for the client from the stored client information; and
creating a unicast data packet wherein the destination address of the unicast data
packet is the retrieved client destination address.

5 14. A system for transmitting multicast information to a client over a communications
network, comprising:

a client, wherein the client is a computer program handling the delivery of multicast
information to a user;

10 an agent, wherein the agent is a computer program receiving multicast information
and distributing the multicast information to the client using a unicast transmission;

a source server, wherein the source server is a computer program managing the
assignment of the client to the agent;

15 a computing device including at least one of:

a program memory, wherein the program memory is adapted to hold some
portion of at least one of a source server, the agent, and the client;

20 a storage device, wherein the storage device contains at least one of the source
server, the agent, and the client; and

a processor, wherein the processor is adapted to at least one of:

(i) load, from the storage device, some portion of at least one of the
source server, the client, and the agent into the program memory;

(ii) register the client with the agent at a multicast-enabled computer;

(iii) receive, by the multicast-enabled computer, a multicast data item;

(iv) generate a unicast data item as a function of the received multicast

25 data item; and

(v) transmit, by the agent, the unicast data item to the registered client.

15. The system according to claim 14, wherein the communications network is the Internet.

16. The system according to claim 14, wherein the processor is further adapted to:

30 generate, by the client, a request to join a multicast group;

transmit the generated request to the source server;

maintain, by the source server, a list of available agents;

designate, by the source server, an agent to provide service to the client; and

assign, by the source server, the client to the designated agent.

17. The system according to claim 14, wherein the processor is further adapted to:

5 generate, by the client, a request to join a multicast group;

transmit the generated request to the source server;

maintain, by the source server, a list of available agents;

determine a composite distance metric for a client/agent pair;

designate, by the source server, an agent to provide service to the client as a function of the composite distance metric for the client/agent pair; and

10 assign, by the source server, the client to the designated agent.

18. The system according to claim 14, wherein at least two of the client, the agent, the source server are stored and operate on at least two separate computing devices.

19. A medium storing instructions adapted to be executed by a processor to perform the steps of:

20 registering a client with an agent at a multicast-enabled computer;

receiving, by the multicast-enabled computer, a multicast data item;

generating a unicast data item as a function of the received multicast data item; and

transmitting, by the agent, the unicast data item to the registered client.

20. A method for receiving by a client information over a communications network, comprising the steps of:

25 registering, by the client, with an agent at a multicast-enabled computer; and

receiving, from the agent, a unicast data item, wherein the unicast data item is generated as a function of a multicast data item sent to a multicast group.

21. The method according to claim 20, wherein the communications network is the Internet.

30 22. The method according to claim 20, the registering step further comprising the steps of:

generating, by the client, a request to join a multicast group;

transmitting the generated request to a source server;

designating, by the source server, the agent to provide service to the client; and

assigning, by the source server, the client to the designated agent.

23. The method according to claim 22, the registering step further comprising the step of: maintaining, by the source server, a list of available agents.
24. The method according to claim 22, wherein the source server is distributed over a plurality of computer systems.
25. The method according to claim 20, the registering step further comprising the steps of: generating, by the client, a request to join a multicast group; transmitting the generated request to the agent at a multicast-enabled computer; and adding, by the agent, the client to a list of unicast recipients serviced by the agent.
26. The method according to claim 20, the registering step further comprising the steps of: generating, by the client, a request to join a multicast group; transmitting the generated request to a primary agent at a multicast-enabled computer; designating, by the primary agent, a service provider agent to provide service to the client; and assigning, by the primary agent, the client to the designated service provider agent.
27. The method according to claim 26, the registering step further comprising the step of: maintaining, by the primary agent, a list of available agents.
28. The method according to claim 20, further comprising the step of: storing client information with the agent as a function of the registering step.
29. The method according to claim 28, the receiving step further comprising: receiving, from the agent, a unicast data item, wherein the unicast data item is generated as a function of a multicast data item sent to a multicast group and a destination address for the client in the stored client information with the agent.
30. A system for receiving multicast information over a communications network, comprising:

10 15 20

a client, wherein the client is a computer program handling the receiving of the multicast information for a user;

an agent, wherein the agent is a computer program distributing the multicast information to the client using a unicast transmission;

5 a computing device including at least one of:

- a program memory, wherein the program memory is adapted to hold some portion of at least one of the client and the agent;
- a storage device, wherein the storage device contains at least one of the client and the agent; and

10 a processor, wherein the processor is adapted to at least one of:

- (i) load, from the storage device, some portion of at least one of the client, and the agent into the program memory;
- (ii) register the client with the agent; and
- (ii) receive, from the agent, a unicast data item, wherein the unicast data item is generated as a function of a multicast data item sent to a multicast group.

31. The system according to claim 30, wherein the communications network is the Internet.

32. The system according to claim 30, wherein the processor is further adapted to at least one of:

- generate, by the client, a request to join the multicast group;
- transmit the generated request to a source server;
- designate, by the source server, the agent to provide service to the client; and
- assign, by the source server, the client to the designated agent.

25 33. The system according to claim 30, wherein the client and the agent are stored and operate on at least two separate computing devices.

30 34. A method for registering a unicast client with an agent at a multicast-enabled computer, comprising the steps of:

- generating, by the unicast client, a request to join a multicast group;
- transmitting the generated request to the agent at the multicast-enabled computer; and

adding, by the agent, the unicast client to a list of unicast recipients serviced by the agent.

35. A method for registering a unicast client with an agent at a multicast-enabled computer,
5 comprising the steps of:

generating, by the unicast client, a request to join a multicast group;
transmitting the generated request to a source server;
designating, by the source server, the agent to provide service to the unicast client; and
assigning, by the source server, the client to the designated agent.

10 36. The method according to claim 35, further comprising the step of:

maintaining, by the source server, a list of available agents.

15 37. The method according to claim 36, wherein the list of available agents is at least one of a database and a table containing information about the agents.

38. The method according to claim 35, wherein the source server is distributed over a plurality of computer systems.

20 39. A method for registering a unicast client with an agent at a multicast-enabled computer, comprising the steps of:

generating, by the unicast client, a request to join a multicast group;
transmitting the generated request to a primary agent at a multicast-enabled computer;
designating, by the primary agent, a service provider agent to provide service to the
25 unicast client; and
assigning, by the primary agent, the unicast client to the designated service provider agent.

40. The method according to claim 39, further comprising the step of:

30 maintaining, by the primary agent, a list of available agents.

41. The method according to claim 40, wherein the list of available agents is at least one of a database and a table containing information about the agents.

42. A method for maintaining, over a communications network, an agent list by a source server, the agent list containing information about at least one agent, the agent handling the sending of multicast transmission data to a client, the client not being able to receive a multicast transmission directly, comprising the steps of:

5 sending, by the agent, a status message to the source server on a periodic basis; and
 updating the agent list as a function of the status message.

43. The method according to claim 42, wherein the communications network is the Internet.

10 44. The method according to claim 42, wherein the agent list is at least one of a database and a table containing information about the agent.

15 45. A method for maintaining, over a communications network, an agent list by a primary agent, the agent list containing information about at least one other agent, the other agent handling the sending of multicast transmission data to a client, the client not being able to receive a multicast transmission directly, comprising the steps of:

 sending, by the other agent, a status message to the primary agent on a periodic basis;
 and
 updating the agent list as a function of the status message.

20 46. The method according to claim 45, wherein the communications network is the Internet.

25 47. The method according to claim 45, wherein the agent list is at least one of a database and a table containing information about the other agent.

48. A method for maintaining, over a communications network, an agent list by a source server, the agent list containing information about at least one agent, the agent handling the sending of multicast transmission data to a client, the client not being able to receive a multicast transmission directly, comprising the steps of:

30 polling, by the source server, the agent to obtain a status data item for the agent; and
 updating the agent list as a function of the status data item.

49. The method according to claim 70, wherein the communications network is the Internet.

50. The method according to claim 48, wherein the agent list is at least one of a database and a table containing information about the agent.